

REMARKS

Claims 1-16, 19-34, 36, 52, and 53 are currently pending in this application. Claim 4 has been amended to correct a typographical error. No new matter has been added by this amendment. Accordingly, claims 1-16, 19-34, 36, 52 will remain pending in the application.

Applicant respectfully reserves the right to pursue the claims as originally filed or similar claims as well as any non-elected, canceled or otherwise unclaimed subject matter in one or more continuation, continuation-in-part, or divisional applications.

Claim Objections

Claim 4 was objected to as containing the informality “he” instead of the word “The”. As discussed above, Claim 4 has been amended to correct this typographical error. No new matter has been added by this amendment. As such, this objection is overcome.

Rejections under 35 U.S.C. §103 (a)

Claims 1-16, 19-34, 52 and 53 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over U.S. Patent No. US 6,528,167 to O’Gara (“O’Gara”) in view of U.S. Patent No. 6,210,570 to Holloway (“Holloway”).

The claims provide a hybrid inorganic/organic monolith having an interior area and an exterior surface, wherein the monolith is represented by (Formula I).

Applicant previously argued that monolithic materials are complex materials to make, and are prepared from a very different process than porous particles; that O’Gara does not disclose porous monolithic materials; that the formation of a monolith from a sol-gel reaction as described by Holloway is not guaranteed; and that Holloway does not discuss the preparation of monoliths of any other type of material, let alone monoliths of a hybrid material.

The Examiner has responded that Holloway was merely cited to show that monolithic columns have many benefits over packed bed columns and that one of ordinary skill in the art would have been able to make such monoliths, despite the difficulties posited by the Applicant, based on knowledge of the art such as a review article by Siouffi. Applicant notes that the Siouffi article was never relied upon by the Examiner in the rejections to the claims.

Applicant respectfully disagrees and again traverse the rejection. To that end, Applicant presents Figure 1 below

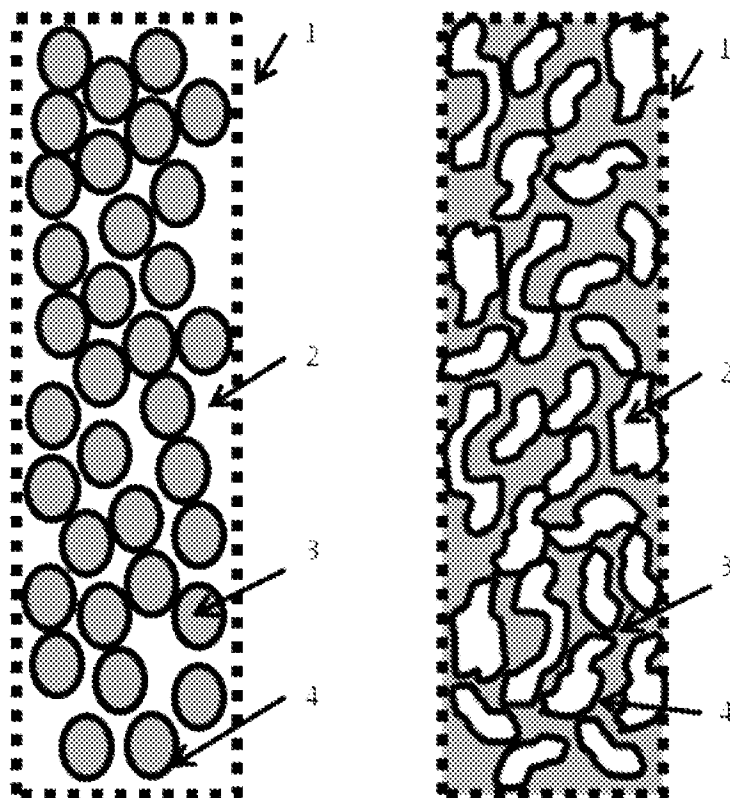


Figure 1. Comparison of a packed bed of oxidatively cleaved particles (left) and an oxidatively cleaved hybrid monolith column (right). 1 = column hardware wall (dashed black line); 2= Interstitial porosity (while fill); 3= internal solid matrix of the hybrid packing material (grey fill); and 4 = the oxidatively cleaved hybrid surface (solid black line).

In a packed bed column (shown on the left) there are a multitude of particles within the column and outside of these particles are the interstitial spaces. In contrast the monolithic column of the claimed invention (shown on the right) has a single material that contains internal voids. The surface area (on a per gram basis) of a single porous particle can be on the same order as the surface area (on a per gram basis) of a single porous monolith. However, if one compares surface area (not on a per gram basis) of a single porous particle to a single porous monolith, the single porous particle has a miniscule surface area compared with the monolith. As a result, one needs to pack a large multitude of porous particles in a bed of material to have similar surface area as a single monolith for a similarly sized device format.

When a multitude of oxidatively cleaved unbounded hybrid particles are packed in column hardware, it is possible to have direct surface to surface contact of two oxidatively cleaved surfaces. Such a construct is not possible for the monolithic device because one monolith is equivalent to a single bed of material. As such, one of ordinary skill in the art would recognize that the only way for direct surface contact of two oxidatively cleaved surfaces on a monolith would be to stack monoliths in a final device - which one of ordinary skill in the art would be disinclined to do.

Furthermore, Applicant notes that the oxidative cleavage of a hybrid particle as in O’Gara can be performed using standard glass equipment. Mixing particles in this reaction allows for uniform surface cleavage. Applicant contends that it would not have been obvious to one of ordinary skill in the art that a hybrid monolith could undergo a similar transformation using a similar process. Indeed, one cannot agitate monoliths in a reaction vessel in the same manner that one would agitate particles. Special care is required to ensure monolith integrity.

As such, even if one of ordinary skill in the art were to attempt to form a monolith from the particles of O’Gara using a sol-gel process as suggested by the Examiner, the final product would not result in a monolith having organic groups removed from the surface as in the instantly claimed invention. At best, one of ordinary skill in the art would prepare a monolith having oxidatively cleaved groups throughout the material as a whole. Even still, one of ordinary skill in the art would immediately recognize that the process of coalescing particles would likely result in a partial or

complete change in the surface of the oxidatively cleaved hybrid particles. As such, even if one of ordinary skill in the art were to attempt to form a monolith from the materials of O’Gara, Applicant respectfully asserts that one of ordinary skill in the art would recognize that such material would not be the same as the claimed material.

As such, Applicant contends that one of ordinary skill in the art would not find the instant claims obvious in light of O’Gara alone or in combination with Holloway.

Rejections for Non-Statutory Double Patenting

Claims 1-15 stand provisionally rejected on the grounds of nonstatutory obviousness-type double patenting over Claims 2, 13-17 and 50-55 of copending Application No. 11/631,341.

Claim 1 stands rejected on the grounds of nonstatutory obviousness-type double patenting over Claim 1 of U.S. Patent No. 7, 250,214 to Walter in view of O’Gara.

Applicant respectfully disagrees and traverse the rejections. Nevertheless, Applicant requests an abeyance of the double patenting rejections until such time that the claims are found allowable but for the obviousness-type double patenting rejections. At that time, Applicant may consider filing Terminal Disclaimers to overcome the rejections.

CONCLUSION

In view of the foregoing, reconsideration and withdrawal of all rejections, allowance of the instant application with all pending claims, and passage of the instant application to issuance are earnestly solicited. If a telephone conversation with Applicants' representatives would help expedite the prosecution of the above-identified application, Applicant invites the Examiner to call Applicant's representatives at the telephone number below.

In view of the amendments and remarks made herein, the application is believed to be in condition for allowance. Favorable reconsideration of the application and prompt issuance of a Notice of Allowance are respectfully requested. Please charge any required fee or credit any overpayment to Deposit Account No. 04-1105, under Order no. 59894 (49991).

Dated: December 29, 2010

Respectfully submitted,

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